

In the specification:

Please replace the original paragraph [0010] with the following:

[0010] In one embodiment, the seal element of the present invention may be an O-ring seals, D-seals, T-seals, V-seals, X-seals, flat seals, lip seals, back-up rings, bonded seals and packing elements, for example. The polymer host material may comprise an elastomer, a thermoset, a thermoplastic or the like. In particular, the polymer host material may comprise an elastomer such nitrile butadiene (NBR) which is a copolymer of acrylonitrile and butadiene, carboxylated acrylonitrile butadiene (XNBR), hydrogenated acrylonitrile butadiene (HNBR) which is commonly referred to as highly saturated nitrile (HSN), carboxylated hydrogenated acrylonitrile butadiene (XHNBR), hydrogenated carboxylated acrylonitrile butadiene (HXNBR), ethylene propylene (EPR), ethylene propylene diene (EPDM), tetrafluoroethylene and propylene (FEPM), fluorocarbon (FKM), perfluoroelastomer (~~FEKM~~) (FEKM) and the like. The polymer host material may be formed from a thermoplastic such as polphenylene sulfide (PPS), polyetheretherketones such as (PEEK), (PEK) and (PEKK), polytetrafluoroethylene (PTFE) and the like. The polymer host material may be formed from a thermoset such as epoxies and phenolics.

Please replace the original paragraph [0049] with the following:

[0049] Each of the elastomeric or polymeric components for downhole tools discussed above as well as equivalents thereof can be formed from a nanocomposite material of the present invention to improve various properties of the material and enhance the useful life of the nanocomposite components and therefore the useful life of the downhole tools. Figure 10 depicts a nanoscopic view of a nanocomposite material 210 for use in downhole tools. Nanocomposite material 210 is formed from a polymer host material 212 that includes multiple polymers, such as polymers 214, 216, 218 and a plurality of nanostructures such as the depicted nanostructure 220 that is identified in figure 10 as NS. Polymer host material 212 exhibits microporosity as represented by a

plurality of regions of free volume, such as region 222. In the illustrated embodiment, nanostructure 220 is positioned within free volume region 222.

Please replace the original paragraph [0052] with the following:

[0052] More specifically, polymer host 212 may be formed from a nitrile elastomer such as nitrile butadiene (NBR) which is a copolymer of acrylonitrile and butadiene, carboxylated acrylonitrile butadiene (XNBR), hydrogenated acrylonitrile butadiene (HNBR) which is commonly referred to as highly saturated nitrile (HSN), carboxylated hydrogenated acrylonitrile butadiene and the like. Polymer host 212 may also be formed from other elastomers such as ethylene propylene (EPR), ethylene propylene diene (EPDM), tetrafluoroethylene and propylene (FEPM), fluorocarbon (FKM), perfluoroelastomer (~~FEKM~~) (FEKM) or the like and equivalents thereof.